No. 2 in a Five-part Series

Making SENSE of MERCURY fact sheet

Mercury in the environment

Mercury is a naturally occurring element that is found in air, water and soil. Mercury exists in several forms: elemental (metallic); inorganic; and organic. Mercury cannot be created or destroyed.

Some forms of mercury are more dangerous than others, but all are toxic. Exposure to mercury – even small amounts – may cause serious health problems. (For more information, see the "Health risks of mercury exposure" fact sheet in this series.)

Mercury is released into the environment from many sources. Mercury becomes airborne when rocks erode, volcanoes erupt and soil decomposes. It then circulates in the atmosphere and is redistributed throughout the environment.

Human activities, such as burning coal, oil and natural gas, burning household trash and mining, add mercury to the environment. Once in the air, mercury falls to the ground with rain and snow, landing on soil or water bodies and causing contamination.

Many common products that we use every day contain mercury and may contaminate the environment when they are disposed of in a landfill, burned or poured down a drain. Mercury also may enter water bodies through a direct release of industrial waste or municipal sewage. Mercury may enter the air when products containing mercury break and release vapors.

Coal-burning power plants are the largest human-caused source of mercury emissions to the air in the United States. Nationwide, they account for more than 40 percent of human-caused emissions according to the U.S. Environmental Protection Agency. There are 13 coal-burning power plants in South Carolina that emit mercury. Another 376 facilities also emit mercury.

Mercury also can be released into the environment when vehicles are crushed, shredded or melted in steel furnaces. The mercury is from hood and trunk light switches. Mercury emissions from steel furnaces, thought to result primarily from these mercury switches, are more than 10 percent of the total mercury emissions in the nation.

How does mercury end up in fish?

Mercury in the air eventually settles into rivers, lakes, streams and oceans or onto land where it washes into water bodies. It is important to know that mercury can have a local impact or be carried across continents by the wind. In water bodies, mercury can be transformed by natural processes into a more toxic form of mercury called methylmercury, a type of organic mercury.

Methylmercury is absorbed by small organisms that are, in turn, eaten by fish (and animals that eat fish). Methylmercury builds up or accumulates in fish – some more than others. The levels of methylmercury in fish depend on what they eat, how long they live and how high they are in the food chain. Sharks and swordfish, for example, have much higher methylmercury concentrations than fish that are lower on the food chain. This is true for both saltwater and freshwater fish.

The most common way people are exposed to mercury is by eating fish containing methylmercury. Methylmercury cannot be removed by cooking or cleaning the fish. Mercury cannot be detected in fish by its smell or appearance.

Pregnant women who eat contaminated fish can pass mercury to their unborn children, who are very sensitive to its toxic effects. (For more information, see "Health risks of mercury exposure," No. 4 in this five-part series.) South Carolina has more than 50 water bodies with fish consumption advisories due to mercury. More than 40 states also have fish advisories because of mercury. It is important to be aware of and follow fish consumption advisories.

What is South Carolina doing to limit risks from mercury?

- **FISH** – The S.C. Department of Health and Environmental Control (DHEC) collects about 1,800 fish samples annually to test for mercury. Higher amounts of mercury in fish tissue tend to occur in the Coastal Plain rather than in the Piedmont.

  Once fish tissue is tested and advisories are reviewed, DHEC distributes the information across the state. Advisory booklets are sent to obstetrician/gynecologist offices, federal rural health clinics, DHEC district offices, county public health departments and clinics, nurse midwives, state parks, the S.C. Department of Natural Resources and a mailing list of individuals who have requested the advisories. The information also is available online at **www.scdhec.gov/fish**.

- **WATER** – DHEC has issued 115 National Pollutant Discharge Elimination System permits that require mercury monitoring, with 13 requiring discharge limits. In some cases, where there is a known source of mercury, DHEC requires the permit holder to try to reduce the amount of mercury at its source. Also, facilities with stormwater discharges from any landfill, any uncovered land application site or open dump that has received industrial waste, and incinerators that burn hazardous waste are required to monitor for mercury.

- **AIR** – Hourly concentrations of ambient gaseous mercury are measured at Congaree Swamp National Park.

  Major facilities (e.g., coal-burning power plants) are required to inventory their mercury emissions.

  The state's open burning regulations make it illegal to burn household garbage, paper and cardboard, motor and waste oil, roofing materials such as shingles and tar, tires and other rubber products, plastic, paint, household cleaners, farm chemicals, electrical wire and insulation, and ductwork.

- **TOXICS RELEASE INVENTORY (TRI) PROGRAM** – TRI reports information on toxic chemical releases including data on mercury and mercury compounds released in the state. Visit **www.epa.gov/tri** for more information.

- **LAND** – There is only one municipal solid waste incinerator in South Carolina. It is in Charleston County.

  DHEC is assessing possible mercury contamination at inactive gold mine sites.

- **HEALTH CARE** – DHEC has removed and properly disposed of mercury thermometers from its lab and from local public health clinics.

Mercury in the Home

Mercury is found in many common products such as thermometers, thermostats, fluorescent bulbs and toys. Batteries used in calculators, watches and hearing aids also may contain mercury. For more information about consumer products that contain mercury, visit **www.epa.gov/mercury/consumer.htm**.

Each of us – at home and at work – needs to reduce the amount of mercury that we use or throw away. Minimize the use of products that contain mercury. Choose alternatives such as digital thermometers or mercury-free thermostats.

Recycle or properly dispose of these products when possible. In South Carolina, several communities have hazardous household materials collection programs or offer single-day collection events. Visit **www.scdhec.gov/recycle** to see if your community has a permanent program. If your community does not, encourage local officials to set up one.

Fluorescent bulbs always should be recycled or disposed of properly. It's the law for building owners, property managers, businesses, schools, offices, hospitals and others. For more information on fluorescent bulb recycling, visit **www.scdhec.gov/brap**.

For more information, visit **www.scdhec.gov/mercury** or call the S.C. Department of Health and Environmental Control's Office of Environmental Community Health at **1-888-849-7241**.
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